

7.4 Solve Linear Systems by Multiplying

Date: _____

Steps for Multiplying

Step 1: Multiply by a fixed number to allow a variable to cancel.

Step 2: Add/Subtract the 2 equations.

Step 3: Solve for remaining variable.

Step 4: Plug in your answer. Solve.

Step 5: Write the solution as an (x,y)

***Be sure to line up your corresponding variables.

Rearranging may be necessary.***

Ex. 1: Solve the linear system:

$$-3(2x + 3y = 5)$$

$$6x + 5y = 19$$

$$-6x - 9y = -15$$

$$\underline{6x + 5y = 19}$$

$$\underline{-4y = 4}$$

$$y = -1$$

$$6x + 5(-1) = 19$$

$$6x - 5 = 19$$

$$\underline{+5} \quad \underline{+5}$$

$$6x = 24$$

$$x = 4$$

Solution: (4, -1)

Ex. 2: Solve the linear system:

$$(5x + 2y = 16) \cdot 2$$

$$3x - 4y = 20$$

$$10x + 4y = 32$$

$$\underline{3x - 4y = 20}$$

$$\underline{13x = 52}$$

$$x = 4$$

$$3(4) - 4y = 20$$

$$\underline{12} - 4y = 20$$

$$\underline{-4y = 8}$$

$$y = -2$$

Solution: (4, -2)

Ex. 3: Solve the linear system:

$$2x + 5y = 3$$

$$3x + 10y = -3$$

Solution: _____

Ex. 4: Solve the linear system:

$$1(2x - 9y = 1)$$

$$-2(7x - 12y = 23)$$

$$\begin{array}{r} 14x - 63y = 7 \\ -14x + 24y = -46 \\ \hline -39y = -39 \\ \hline y = 1 \end{array}$$

$$7x - 12(1) = 23$$

$$7x - 12 = 23$$

$$+12 \quad +12$$

$$7x = 35$$

$$x = 5$$

Solution: (5, 1)

Ex. 5: Solve the linear system:

$$4x + 5y = 35$$

$$2y = 3x - 9$$

$$\begin{array}{r} -3x \quad -3x \\ \hline \end{array}$$

$$-2(4x + 5y = 35)$$

$$5(-3x + 2y = -9)$$

$$-8x - 10y = -70$$

$$-15x + 10y = -45$$

$$\begin{array}{r} -23x = -115 \\ \hline -23 \quad -23 \end{array}$$

$$x = 5$$

$$2y = 3(5) - 9$$

$$2y = 15 - 9$$

$$2y = 6$$

$$y = 3$$

Solution: (5, 3)

Ex. 6: Solve the linear system:

$$3x - 7y = 5$$

$$-5x + 9y = 5$$

Solution: _____

Homework: